

Remarks:

Claim 1 has been amended, claims 3 and 5 have been cancelled, claims 16-30 were previously withdrawn and new claims 32 and 33 have been added. Accordingly, claims 1, 2, 4, 6-15 and 31-33 are currently pending for consideration.

I. Amendments:

Amended claim 1 now recites that the polysaccharide has a first cationic substituent having an aromatic group comprising the general formula (I) and a second substituent having no aromatic group comprising the general formula (II). Support for amended claim 1 can be found throughout the specification and, more specifically, in previously presented claims 1, 3 and 5. Accordingly, no new matter has been added.

New claims 32 and 33 specify molar ratios of the first and second substituents. Support for these claims can be found in the specification at page 10, lines 6-7. No new matter has been added.

II. The Invention:

The presently claimed invention is directed to a process for the production of paper from an aqueous suspension containing cellulosic fibres, and optionally fillers.

The process includes adding to the suspension a cationized polysaccharide product which includes a polysaccharide having (i) at least one first cationic substituent having an aromatic group having the general formula (I), as recited in currently amended claim 1, and (ii) at least one second substituent having no aromatic group having the general formula (II), as recited in currently amended claim 1, and forming and draining the suspension on a wire. The molar ratio of the first substituent to the second substituent is from 10:1 to 1:10, preferably 7:1 to 1:7.

The combination of aromatic and non-aromatic substituents in specific ratios, as presently claimed, results in improvements in burst strength index, dewatering time and/or retention.

III. Rejections:

Claims 1-4 and 7 stand rejected under 35 U.S.C. § 102(b), as being anticipated by U.S. Patent No. 4,093,510 to Carr (hereinafter "Carr"). The Applicants respectfully traverse.

Carr is directed to amphoteric starch derivatives and their application as wet-end additives for purportedly improving both wet and dry strength of paper.

As this rejection does not include previous claim 5 and the subject matter of previous claim 5 has been incorporated into currently amended claim 1, it is respectfully submitted that, for this reason alone, the rejection based on Carr is now moot.

Accordingly, it is respectfully requested that the rejections of claims 1-4 and 7 under 35 U.S.C. § 102(b), as being anticipated by Carr be withdrawn.

Claims 1-10, 13-15 and 31 stand rejected under 35 U.S.C. § 102(b), as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a), as being obvious over, Persson et al (WO 99/55964). The Applicants respectfully traverse.

Persson et al. is directed to a process for the production of paper from a suspension, which includes adding to the suspension a drainage and retention aide that includes a cationic or amphoteric polysaccharide, and forming and dewatering the suspension on a wire. The cationic polysaccharide has a hydrophobic group.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Applicants respectfully submit that Persson et al. do not disclose a process for the production of paper from a suspension, which includes adding to the suspension a cationized polysaccharide product which includes a polysaccharide having both (i) at least one first cationic substituent having an aromatic group and (ii) at least one second substituent having no aromatic group, wherein the molar ratio of the first substituent to the second substituent is from 10:1 to 1:10, as presently claimed in amended claim 1.

Accordingly, as Persson et al. do not disclose each and every element as set forth in the present claims 1-10, 13-15 and 31, and do not show the identical invention in as complete detail as claimed, it is respectfully submitted that Persson et al. cannot anticipate the present claims. See *Verdegaal*, 814 F.2d at 631 and *Richardson*, 868 F.2d at 1236.

The Office Action identifies an embodiment of Persson et al. that discloses aromatic substitution by a cationic agent being N-dialkyl-N-aralkyl ammonium halide or N-(3-chloro-2-hydroxypropyl)-N-benzyl-N,N-dimethyl ammonium chloride, which are of the general formula (I) of the present invention. However, there is no teaching or suggestion by Persson et al. of non-aromatic substitution with a second substituent together with this aromatic substitution, as presently claimed.

Consequently, Applicants respectfully submit that there is no disclosure, teaching or suggestion in Persson et al of the presence of a polysaccharide having both a first cationic substituent having an aromatic group and a second substituent having no aromatic group, as presently claimed. Thus, for this reason, amended claim 1 is not anticipated or rendered obvious by Persson et al..

Moreover, the use of both the first and second substituents according to the present claims provides unexpected results. In that regard, Example 2 (Table 1) of the present invention clearly shows that when comparing the performance of : 1) Ref.3, i.e., a cationic starch being made by reacting native starch with a cationic

aromatic agent (represented by 3-chloro-2-hydroxypropyl dimethyl benzyl ammonium chloride); and 2) the invention, i.e., a cationic starch made by reacting native starch with a cationic aromatic agent (represented by 3-chloro-2-hydroxypropyl dimethyl benzyl ammonium chloride) and a non-aromatic agent (represented by 2,3-epoxypropyl trimethyl ammonium chloride), the cationic starch according to the invention gives much better results in terms of Burst Strength Index Increase.

Therefore, it is respectfully submitted that the present invention shows unexpected results for a process using the polysaccharide, as presently claimed.

Accordingly, it is respectfully requested that the rejections of claims 1-10, 13-15 and 31 under 35 U.S.C. § 102(b), as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a), as being obvious over, Persson et al (WO 99/55964) be withdrawn.

Claims 1-9, 11-15 and 31 also stand rejected under 35 U.S.C. § 102(a or e), as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a), as being obvious over, U.S. Patent No. 6,818,100 to Lindgren et al. (hereinafter "Lindgren et al."). The Applicants respectfully traverse.

Lindgren et al. is directed to a process for sizing paper that includes adding to an aqueous suspension containing cellulosic fibers, and optional fillers, a sizing dispersion that includes a polymer having an aromatic group, and a sizing promoter having including a polymer having an aromatic group, wherein the sizing dispersion and sizing promoter are added separately.

Applicants respectfully submit that Lindgren et al. do not disclose a process for the production of paper from a suspension, which includes adding to the suspension a cationized polysaccharide product which includes a polysaccharide having both (i) at least one first cationic substituent having an aromatic group and (ii) at least one second substituent having no aromatic group, wherein the molar ratio of

the first substituent to the second substituent is from 10:1 to 1:10, as presently claimed in amended claim 1.

Accordingly, as Lindgren et al. do not disclose each and every element as set forth in the present claims 1-9, 11-15 and 31, and do not show the identical invention in as complete detail as claimed, it is respectfully submitted that Lindgren et al. cannot anticipate the present claims. See *Verdegaal*, 814 F.2d at 631 and *Richardson*, 868 F.2d at 1236.

The Office Action identifies an embodiment of Lindgren et al. that discloses aromatic substitution by a cationic agent being N-dialkyl-N-aralkyl ammonium halide or N-(3-chloro-2-hydroxypropyl)-N-benzyl-N,N-dimethyl ammonium chloride, which are of the general formula (I) of the present invention. However, there is no teaching or suggestion by Lindgren et al. of non-aromatic substitution together with this aromatic substitution, as presently claimed.

Moreover, as discussed above with respect Persson et al., the use of both the first and second substituents according to the presently claimed invention provides unexpected results.

Accordingly, it is respectfully requested that the rejections of claims 1-9, 11-15 and 31 under 35 U.S.C. § 102(b), as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a), as being obvious over, Lindgren et al., be withdrawn.

Claim 10 also stands rejected under 35 U.S.C. § 103(a), as being obvious over Lindgren et al. in view of Persson et al.. The Applicants respectfully traverse.

For the reasons discussed above in response to the rejections based on Persson et al. and Lindgren et al., the applicants respectfully submit that neither Persson et al. nor Lindgren et al., when read individually or together, disclose, teach or suggest a process for the production of paper from a suspension, which includes adding to the suspension a cationized polysaccharide product which includes a

polysaccharide having (i) at least one first cationic substituent having an aromatic group and (ii) at least one second substituent having no aromatic group, wherein the molar ratio of the first substituent to the second substituent is from 10:1 to 1:10, as presently claimed in amended claim 1.

As claim 10 depends from claim 1, and includes all the limitations of claim 1, it is respectfully submitted that claim 10 is not obvious over Lindgren et al. in view of Persson et al. for the reasons discussed with respect to claim 1.

Accordingly, it is respectfully requested that the rejection of claim 10 under 35 U.S.C. § 103(a), as being obvious over Lindgren et al., in view of Persson et al., be withdrawn.

Conclusion:

In light of the foregoing, Applicants respectfully submit that the application as amended is now in proper form for allowance, which action is earnestly solicited. If the Examiner has any questions relating to this Amendment or to this application in general, it is respectfully requested that the Examiner contact Applicants' undersigned attorney at the telephone number provided below.

Respectfully submitted,



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